



(Standard)



(Optional)



(G model)

Features

- 5"×3" compact size
- Medical safety approved (2 x MOPP) according to ANSI/AAMI ES60601-1 and IEC/EN 60601-1
- Suitable for BF application with appropriate system consideration
- 100W convection, 145W force air
- EMI Class B for Class I configuration
- No load power consumption<0.75W by PS-ON control (G model)
- Extremely low leakage current
- 5Vdc standby output, Power Good, Power Fail
- Protections: Short circuit / Overload / Over voltage / Over temperature
- Lifetime > 85K hours
- 3 years warranty

Applications

- Oral irrigator
- Hemodialysis machine
- Medical monitors
- Sleep apnea devices
- Pumps machine

Description

RPT(G)-160 is a 145W highly reliable PCB type medical power supply with a high power density on the 5" by 3" footprint. It accepts 90~264VAC input and offers triple output voltages. The extremely low leakage current is less than 160 μ A. In addition, it conforms to international medical regulations (2*MOPP) and EMC EN55011, perfectly fitting all kinds of BF rated "patient contact" medical system equipment. RPT(G)-160 series also offers the enclosed style model [RPT(G)-160-C].

Model Encoding

RPT **G** - 160 **A** - **C**

- Type
- Output voltage
- Rated wattage
- Green model, with 5V_{sb} and no load < 0.75W
- Series name

Type	Description	Note
Blank	PCB Type	In Stock
C	Enclosed casing type	Optional

SPECIFICATION for PCB Type(standard)

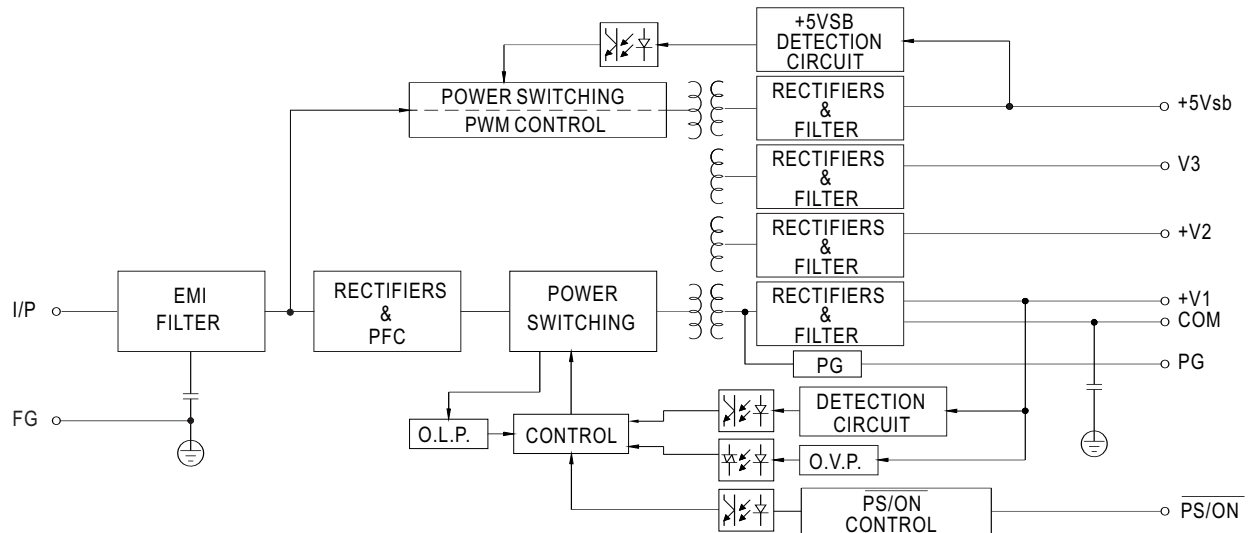
MODEL	RPT(G)-160A				RPT(G)-160B			RPT(G)-160C			RPT(G)-160D							
OUTPUT	OUTPUT NUMBER		CH1	CH2	CH3	CH1	CH2	CH3	CH1	CH2	CH3	CH1	CH2	CH3				
	DC VOLTAGE		5V	12V	-5V	5V	12V	-12V	5V	15V	-15V	5V	12V	24V				
	CURRENT	RATED (20.5CFM)	14A	5.5A	1A	14A	5A	1A	14A	3.6A	1A	11A	5A	1.2A				
		RANGE (20.5CFM)	0.6 ~ 14A	0.2 ~ 5.5A	0.1 ~ 1A	0.6 ~ 14A	0.2 ~ 5A	0.1 ~ 1A	0.6 ~ 14A	0.1 ~ 3.6A	0.1 ~ 1A	0.3 ~ 11A	0.2 ~ 5A	0.15 ~ 1.2A				
		RANGE (convection)	0.6 ~ 9A	0.2 ~ 3.8A	0.1 ~ 0.6A	0.6 ~ 9A	0.2 ~ 3.4A	0.1 ~ 0.8A	0.6 ~ 9A	0.1 ~ 2.6A	0.1 ~ 0.8A	0.3 ~ 8A	0.2 ~ 2.6A	0.15 ~ 1A				
	RATED POWER	20.5CFM Note.2	145W			146W			143W			147.8W						
		Convection Note.3	98.6W			98.4W			99W			98.2W						
	RIPPLE & NOISE (max.) Note.4		60mVp-p	80mVp-p	120mVp-p	60mVp-p	100mVp-p	100mVp-p	60mVp-p	80mVp-p	100mVp-p	80mVp-p	100mVp-p	120mVp-p				
	VOLTAGE ADJ. RANGE		CH1:5 ~ 5.5V															
	VOLTAGE TOLERANCE Note.5		±2.0%	±5.0%	-5,+7%	±2.0%	±5.0%	-4,+5%	±2.0%	±4.0%	±8.0%	±2.0%	±5.0%	+7,-5%				
LINE REGULATION		±0.5%	±1.0%	±1.0%	±0.5%	±1.0%	±1.0%	±0.5%	±1.0%	±1.0%	±0.5%	±1.0%	±1.0%					
LOAD REGULATION		±1.5%	±3.0%	-5,+6%	±1.5%	±3.0%	-4,+5%	±2.0%	±3.0%	±8.0%	±1.5%	±3.0%	-3,+4%					
SETUP, RISE TIME		1800ms, 30ms/230VAC 3500ms, 30ms/115VAC at full load																
HOLD UP TIME (Typ.)		30ms/230VAC 20ms/115VAC at full load																
INPUT	VOLTAGE RANGE Note.6	90 ~ 264VAC		127 ~ 370VDC														
	FREQUENCY RANGE		47 ~ 63Hz															
	POWER FACTOR (Typ.)		PF>0.93/230VAC		PF>0.98/115VAC at full load													
	EFFICIENCY (Typ.)		84%				84%				83%				83%			
	AC CURRENT (Typ.)		1.8A/115VAC		0.9A/230VAC													
	INRUSH CURRENT (Typ.)		COLD START 35A/115VAC				70A/230VAC											
	LEAKAGE CURRENT (max.) Note.7		Earth leakage current < 160 μ A/264VAC , Touch current < 100 μ A/264VAC															
PROTECTION	OVERLOAD	105 ~ 135% rated output power Protection type : Hiccup mode, recovers automatically after fault condition is removed																
	OVER VOLTAGE	Ch1: 5.7 ~ 6.8V Protection type : Shut down o/p voltage, re-power on to recover																
	OVER TEMPERATURE	TSW1: Shut down o/p voltage, recovers automatically after temperature goes down																
		TSW2: Shut down o/p voltage, re-power on to recover																
FUNCTION	5V STANDBY (G model)	5Vsb : 5V@0.6A without fan, 0.8A with fan 20.5CFM ; Tolerance $\pm$ 2%, ripple : 50mVp-p(max.)																
	PS-ON INPUT SIGNAL (G model)	Power on: PS-ON = "Hi" or " > 2 ~ 5V" ; Power off: PS-ON = "Low" or " < 0 ~ 0.5V"																
	POWER GOOD / POWER FAIL	500ms>PG>10ms PF>1ms																
ENVIRONMENT	WORKING TEMP.	-20 ~ +70 $^{\circ}$ C (Refer to "Derating Curve")																
	WORKING HUMIDITY	20 ~ 90% RH non-condensing																
	STORAGE TEMP., HUMIDITY	-40 ~ +85 $^{\circ}$ C, 10 ~ 95% RH non-condensing																
	TEMP. COEFFICIENT	$\pm$ 0.03%/ $^{\circ}$ C (0 ~ 50 $^{\circ}$ C)																
	VIBRATION	10 ~ 500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes																
	OPERATING ALTITUDE Note.8	3000 meters																
SAFETY & EMC (Note 10)	SAFETY STANDARDS	IEC60601-1, EAC TP TC 004,UL ANSI/AAMI ES60601-1, CAN/CSA-C22.2 No. 60601-1:14 - Edition 3 approved, TUV EN60601-1 approved																
	ISOLATION LEVEL	Primary-Secondary: 2xMOPP, Primary-Earth:1xMOPP, Secondary-Earth:1xMOPP																
	WITHSTAND VOLTAGE	I/P-O/P:4KVAC I/P-FG:2KVAC O/P-FG:1.5KVAC																
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG:100M Ohms / 500VDC / 25 $^{\circ}$ C / 70% RH																
	EMC EMISSION	Parameter				Standard				Test Level / Note								
		Conducted emission				EN55011 (CISPR11)				Class B								
		Radiated emission				EN55011 (CISPR11)				Class B								
		Harmonic current				EN61000-3-2				Class A								
		Voltage flicker				EN61000-3-3				-----								
	EMC IMMUNITY	EN60601-1-2																
		Parameter				Standard				Test Level / Note								
		ESD				EN61000-4-2				Level 4, 15KV air ; Level 4, 8KV contact								
		RF field susceptibility				EN61000-4-3				Level 3, 10V/m(80MHz~2.7GHz) Table 9, 9~28V/m(385MHz~5.78GHz)								
		EFT bursts				EN61000-4-4				Level 3, 2KV								
		Surge susceptibility				EN61000-4-5				Level 3, 2KV/Line-FG ; 1KV/Line-Line								
		Conducted susceptibility				EN61000-4-6				Level 3, 10V								
		Magnetic field immunity				EN61000-4-8				Level 4, 30A/m								
		Voltage dip, interruption				EN61000-4-11				100% dip 1 periods, 30% dip 25 periods, 100% interruptions 250 periods								
OTHERS		MTBF	191.4K hrs min. MIL-HDBK-217F (25 $^{\circ}$ C)															
		DIMENSION (L*W*H)	PCB type: 127*76.2*34.6mm or 5"*3"*1.36" inch															
		PACKING	0.33Kg; 36pcs/12.9Kg/0.79CUFT															
NOTE		1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25 $^{\circ}$ C of ambient temperature. 2. The rated power includes 5Vsb @ 0.8A. 3. The rated power includes 5Vsb @ 0.6A. 4. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1 μ f & 47 μ f parallel capacitor. 5. Tolerance : includes set up tolerance, line regulation and load regulation. 6. Derating may be needed under low input voltages. Please check the derating curve for more details. 7. Touch current was measured from primary input to DC output. 8. The ambient temperature derating of 3.5 $^{\circ}$ C/1000m with fanless models and of 5 $^{\circ}$ C/1000m with fan models for operating altitude higher than 2000m(6500ft). 9. HS1,HS2 & HS3 can not be shorted. 10. The power supply is considered a component which will be installed into a final equipment. All the EMC tests are been executed by mounting the unit on a 360mm*360mm metal plate with 1mm of thickness. The final equipment must be re-confirmed that it still meets EMC directives. For guidance on how to perform these EMC tests, please refer to “EMI testing of component power supplies.” (as available on http://www.meanwell.com)																

SPECIFICATION for Enclosed Type(optional)

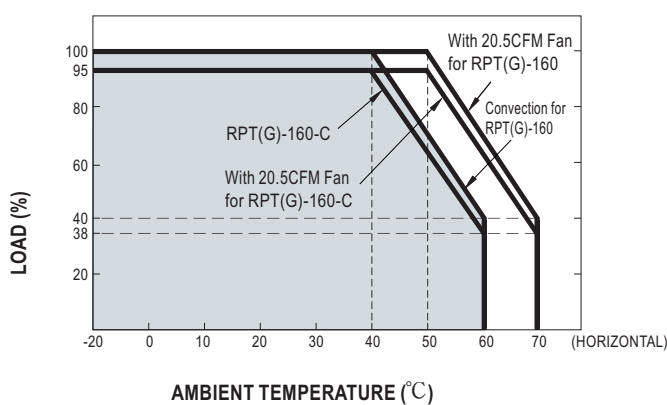
MODEL		RPT(G)-160A-C				RPT(G)-160B-C			RPT(G)-160C-C			RPT(G)-160D-C				
OUTPUT	OUTPUT NUMBER		CH1	CH2	CH3	CH1	CH2	CH3	CH1	CH2	CH3	CH1	CH2	CH3		
	DC VOLTAGE		5V	12V	-5V	5V	12V	-12V	5V	15V	-15V	5V	12V	24V		
	CURRENT	RATED (20.5CFM)	13.3A	5.2A	0.95A	13.3A	4.8A	0.95A	13.3A	3.4A	0.95A	10.5A	4.8A	1.14A		
		RANGE (20.5CFM)	0.6 ~ 13.3A	0.2 ~ 5.2A	0.1 ~ 0.95A	0.6 ~ 13.3A	0.2 ~ 4.8A	0.1 ~ 0.95A	0.6 ~ 13.3A	0.1 ~ 3.4A	0.1 ~ 0.95A	0.3 ~ 10.5A	0.2 ~ 4.8A	0.15 ~ 1.14A		
		RANGE (convection)	0.6 ~ 8.5A	0.2 ~ 3.6A	0.1 ~ 0.57A	0.6 ~ 8.5A	0.2 ~ 3.2A	0.1 ~ 0.76A	0.6 ~ 8.5A	0.1 ~ 2.5A	0.1 ~ 0.76A	0.3 ~ 7.6A	0.2 ~ 2.5A	0.15 ~ 0.95A		
	RATED POWER	20.5CFM Note.2	137.7W			139.5W			135.8W			141.5W				
		Convection Note.3	91.6W			93W			94.4W			93.8W				
	RIPPLE & NOISE (max.) Note.4		60mVp-p		80mVp-p	120mVp-p	60mVp-p		100mVp-p	100mVp-p	60mVp-p	80mVp-p	100mVp-p	80mVp-p	100mVp-p	120mVp-p
	VOLTAGE ADJ. RANGE		CH1:5 ~ 5.5V													
	VOLTAGE TOLERANCE Note.5		±2.0%	±5.0%	-5,+7%	±2.0%	±5.0%	-4,+5%	±2.0%	±4.0%	±8.0%	±2.0%	±5.0%	+7,-5%		
LINE REGULATION		±0.5%	±1.0%	±1.0%	±0.5%	±1.0%	±1.0%	±0.5%	±1.0%	±1.0%	±0.5%	±1.0%	±1.0%			
LOAD REGULATION		±1.5%	±3.0%	-5,+6%	±1.5%	±3.0%	-4,+5%	±2.0%	±3.0%	±8.0%	±1.5%	±3.0%	-3,+4%			
SETUP, RISE TIME		1800ms, 30ms/230VAC				3500ms, 30ms/115VAC at full load										
HOLD UP TIME (Typ.)		30ms/230VAC				20ms/115VAC at full load										
INPUT	VOLTAGE RANGE Note.6	90 ~ 264VAC		127 ~ 370VDC												
	FREQUENCY RANGE	47 ~ 63Hz														
	POWER FACTOR (Typ.)	PF>0.93/230VAC				PF>0.98/115VAC at full load										
	EFFICIENCY (Typ.)	84%				84%				83%				83%		
	AC CURRENT (Typ.)	1.8A/115VAC		0.9A/230VAC												
	INRUSH CURRENT (Typ.)	COLD START 35A/115VAC				70A/230VAC										
	LEAKAGE CURRENT (max.) Note.7	Earth leakage current < 160 μ A/264VAC , Touch current < 100 μ A/264VAC														
PROTECTION	OVERLOAD	105 ~ 135% rated output power Protection type : Hiccup mode, recovers automatically after fault condition is removed														
	OVER VOLTAGE	Ch1: 5.7 ~ 6.8V Protection type : Shut down o/p voltage, re-power on to recover														
	OVER TEMPERATURE	TSW1: Shut down o/p voltage, recovers automatically after temperature goes down														
		TSW2: Shut down o/p voltage, re-power on to recover														
FUNCTION	5V STANDBY (G model)	5Vsb : 5V@0.6A without fan, 0.8A with fan 20.5CFM ; Tolerance $\pm$ 2%, ripple : 50mVp-p(max.)														
	PS-ON INPUT SIGNAL (G model)	Power on: PS-ON = "Hi" or " > 2 ~ 5V" ; Power off: PS-ON = "Low" or " < 0 ~ 0.5V"														
	POWER GOOD / POWER FAIL	500ms>PG>10ms				PF>1ms										
ENVIRONMENT	WORKING TEMP.	-20 ~ +70°C (Refer to "Derating Curve")														
	WORKING HUMIDITY	20 ~ 90% RH non-condensing														
	STORAGE TEMP., HUMIDITY	-40 ~ +85°C , 10 ~ 95% RH non-condensing														
	TEMP. COEFFICIENT	$\pm$ 0.03%/°C (0 ~ 50°C)														
	VIBRATION	10 ~ 500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes														
	OPERATING ALTITUDE Note.8	3000 meters														
SAFETY & EMC (Note 10)	SAFETY STANDARDS	Design refer to IEC60601-1, EAC TP TC 004,UL ANSI/AAMI ES60601-1, CAN/CSA-C22.2 No. 60601-1:14 - Edition 3 approved, TUV EN60601-1(Pending for CB/TUV)														
	ISOLATION LEVEL	Primary-Secondary: 2xMOPP, Primary-Earth:1xMOPP, Secondary-Earth:1xMOPP														
	WITHSTAND VOLTAGE	I/P-O/P:4KVAC I/P-FG:2KVAC O/P-FG:1.5KVAC														
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG:100M Ohms / 500VDC / 25°C / 70% RH														
	EMC EMISSION	Parameter	Standard							Test Level / Note						
		Conducted emission					EN55011 (CISPR11)				Class B					
		Radiated emission					EN55011 (CISPR11)				Class B					
		Harmonic current					EN61000-3-2				Class A					
		Voltage flicker					EN61000-3-3				-----					
	EMC IMMUNITY	EN60601-1-2														
		Parameter	Standard							Test Level / Note						
		ESD					EN61000-4-2				Level 4, 15KV air ; Level 4, 8KV contact					
		RF field susceptibility					EN61000-4-3				Level 3, 10V/m(80MHz~2.7GHz) Table 9, 9~28V/m(385MHz~5.78GHz)					
		EFT bursts					EN61000-4-4				Level 3, 2KV					
		Surge susceptibility					EN61000-4-5				Level 3, 2KV/Line-FG ; 1KV/Line-Line					
		Conducted susceptibility					EN61000-4-6				Level 3, 10V					
		Magnetic field immunity					EN61000-4-8				Level 4, 30A/m					
		Voltage dip, interruption					EN61000-4-11				100% dip 1 periods, 30% dip 25 periods, 100% interruptions 250 periods					
OTHERS		MTBF	191.4K hrs min. MIL-HDBK-217F (25°C)													
	DIMENSION	Enclosed type: 130*86*43mm or 5.11"*3.39"*1.69" inch														
	PACKING	0.49Kg; 24pcs/12.8Kg/0.77CUFT														
NOTE	1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature. 2. The rated power includes 5Vsb @ 0.8A. 3. The rated power includes 5Vsb @ 0.6A. 4. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1 μ f & 47 μ f parallel capacitor. 5. Tolerance : includes set up tolerance, line regulation and load regulation. 6. Derating may be needed under low input voltages. Please check the derating curve for more details. 7. Touch current was measured from primary input to DC output. 8. The ambient temperature derating of 3.5°C/1000m with fanless models and of 5°C/1000m with fan models for operating altitude higher than 2000m(6500ft). 9. HS1,HS2 & HS3 can not be shorted. 10. The power supply is considered a component which will be installed into a final equipment. All the EMC tests are been executed by mounting the unit on a 360mm*360mm metal plate with 1mm of thickness. The final equipment must be re-confirmed that it still meets EMC directives. For guidance on how to perform these EMC tests, please refer to "EMI testing of component power supplies." (as available on http://www.meanwell.com)															

Block Diagram

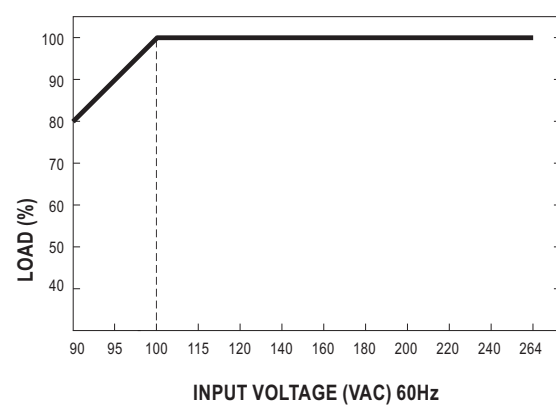
fosc :100KHz



Derating Curve



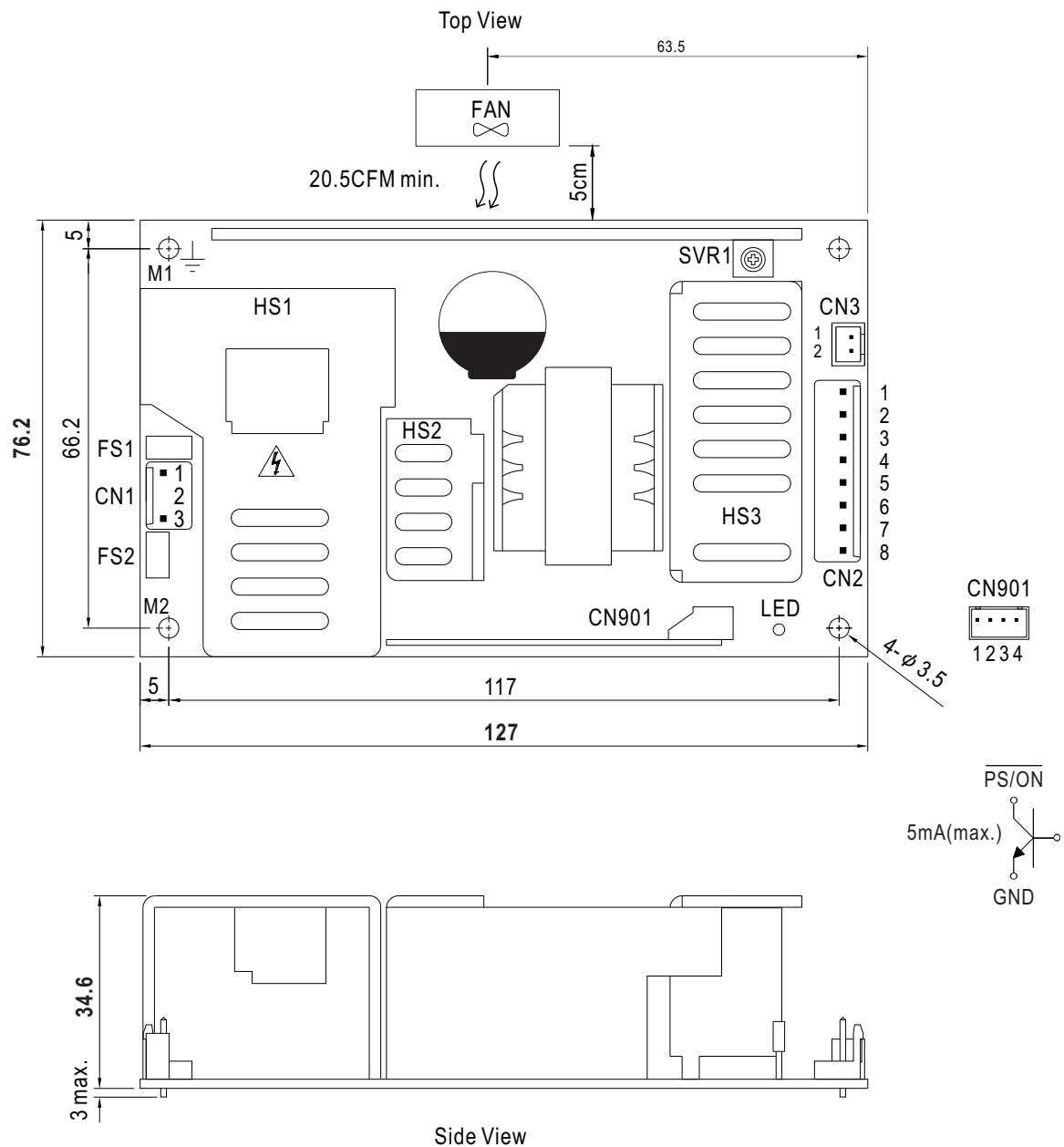
Output Derating VS Input Voltage



Mechanical Specification

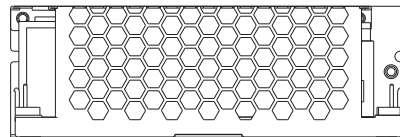
Unit:mm

PCB Type: RPT-160(G)

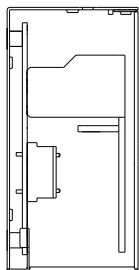
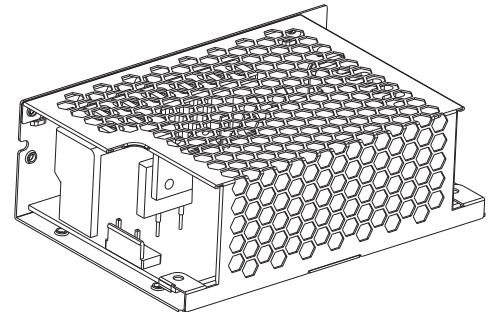


● Enclosed Type: RPT-160(G)-C

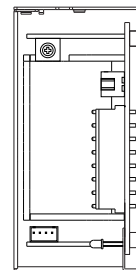
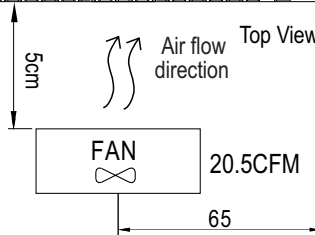
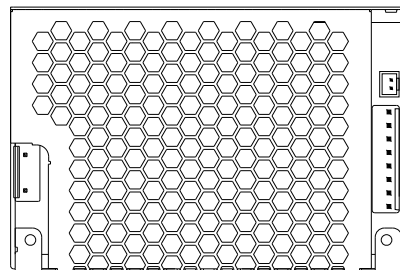
Case No.247A Unit:mm



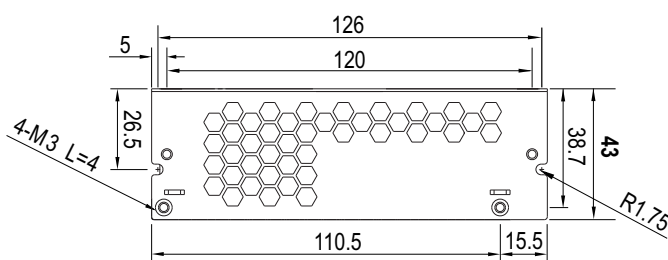
Side View



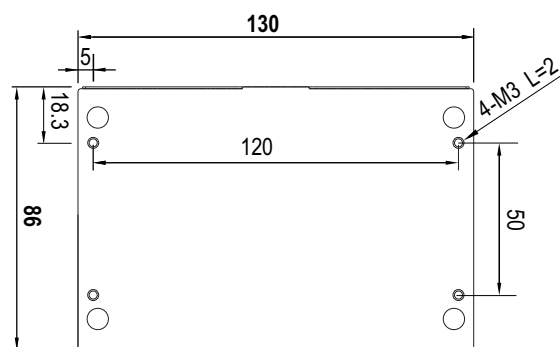
Side View



Side View



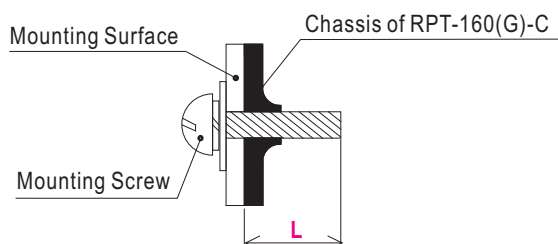
Side View



Bottom View

※ Mounting Instruction

Hole No.	Recommended Screw Size	MAX. Penetration Depth L	Recommended mounting torque
① ②	M3	2mm	4~6Kgf-cm



AC Input Connector (CN1) : JST B3P-VH or equivalent

Pin No.	Assignment	Mating Housing	Terminal
1	AC/L	JST VHR or equivalent	JST SVH-21T-P1.1 or equivalent
2	No Pin		
3	AC/N		

DC Output Connector (CN2) : JST B8P-VH or equivalent

Pin No.	Assignment	Mating Housing	Terminal
1,2,3,4	COM	JST VHR or equivalent	JST SVH-21T-P1.1 or equivalent
5,6	CH1		
7	CH2		
8	CH3		

Power Good Connector(CN3):JST B2B-XH or equivalent

Pin No.	Status	Mating Housing	Terminal
1	PG	JST XHP or equivalent	JST SXH-001T-P0.6 or equivalent
2	GND		

5VSB Connector(CN901) : JST B-XH or equivalent

Pin No.	Assignment	Mating Housing	Terminal
1	PS/ON	JST XHP or equivalent	JST SXH-001T or equivalent
2,4	GND		
3	5VSB		

- ⚠ 1.HS1,HS2,HS3 can not be shorted
2.M1 and M2 are Safety ground and should all be grounded.

- ※ Note: 1. The PCB type (Blank Type) model delivers EMI Class B for both conducted emission and radiated emission for the power supply, when configured into either Class I (with FG).
2. The enclosed type (-C type) model is not suitable for configuration within a Class II (no FG) system, but suggested within a Class I (with FG) system.
3. Mounting Instruction for Enclosed type only.

■ INSTALLATION MANUAL

Please refer to : <http://www.meanwell.com/manual.html>